



TYPICAL MODULE CONSTRUCTION DETAIL

FILL CHART					
Inches from top edge	MODULE WEIGHTS (LBS)				
	200	400	700	1400	2100
	8 1/2	5	4	3	0

TYPE B LAYOUT

MODULE NUMBER	TYPE B ATTENUATION DEVICE										
	DASH NUMBER										
	75	70	65	60	55	50	45	40	35	30	25
MODULE WEIGHTS											
B1	2100										
B2	2100										
B3	2100	2100	2100	2100	2100	2100	2100	2100	2100		
B4	2100	2100	2100	2100	2100	2100	2100	2100	2100		
B5	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
B6	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
B7	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
B8	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
B9	700	700	700	700	700	700	700	700	700	700	700
B10	700	700	700	700	700	700	700	700	700	700	700
B11	700	700	700	700	700	700	700	700	700	700	700
B12	700	700	700	700	700	700	700	700	700	700	700
B13	700	700	700	700	700	700	700	700	700	700	700
B14	400	400	400	400	400	400	400	400	400	400	400
B15	400	400	400	400	400	400	400	400	400	400	400
B16	200	200	200	200	200	200	200	200	200	200	200
LENGTH (L)	34.2'	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	27.2'	27.2'
REPLACEMENT MODULE											
2100	1	1	1	1	1	1	1	1	1	1	1
1400	1	1	1	1	1	1	1	1	1	1	1
700	2	2	2	2	2	2	2	2	2	2	2
400	1	1	1	1	1	1	1	1	1	1	1
200	2	2	2	1	1	1	1	1	1	1	1

ATTENUATION DEVICE

Notes

- Materials
 - Modules shall be manufactured from a frangible polyethylene material which will shatter upon impact.
 - Modules shall be filled with class 43 aggregate meeting the requirements for aggregate according to Section 816.03B of the Standard Specifications.The fill unit weight shall be at least 100 pounds per cubic foot. Fill left over winter shall have a moisture content of 2% or less.
- Modules
 - The modules shall be provided in two sizes to contain volumes of either 2, 4, 7, 14, or 21 cubic feet as a minimum.
 - The module for the 2, 4 or 7 cubic foot container shall consist of three components:
 - A 14 C.F., yellow outer container.
 - A black lid which locks securely over the top lip of the container.
 - A cone-shaped supporting insert. The insert shall be varied to allow for the three sizes of modules and capable of supporting 200, 400, or 700 pounds of sand mass. The cone inserts shall be placed inside the 14 cubic foot container.
 - The module for the 21 cubic foot container shall consist of two components:
 - A 36" height X 36" width yellow outer container.
 - A black lid which locks securely over the top of the container.
- The module shall be manufactured by Energy Absorption Systems of Chicago, Illinois, or an approved equal.
- The Typical Module and Type B Layout is based on the Energite Crash Cushion manufactured by Energy Absorption. The manufacture of other sand filled attenuation shall provide the necessary layouts that are different than the ones shown.
- The contractor shall provide the required modules for Type B layouts as required in the plans. The contractor shall also provide and have available on the project site additional replacement modules (see chart) for each layout location up to a maximum of 20 modules per project. The cost for providing, and having available replacement modules on the project site for the duration of the project shall be included in the price bid for "Type B Attenuation Device".
- The contractor shall be responsible for maintaining the modules in each layout. Any damaged modules will be replaced by the contractor. The Department will reimburse the contractor for damaged modules (materials only) based on invoice price plus applicable mark-ups for materials and subcontracting according to Section 109.04 of the Standard Specifications. All other costs for labor, equipment and materials required to maintain and replace damaged modules shall be included in the price bid for the item "Type B Attenuation Device".
- The attenuation devices may be placed on pallets to facilitate maintenance. Pallets shall have a maximum thickness of 3 1/2".

- The material used for fill may be obtained from an area within the right of way as designated by the Engineer. Upon completion of the work, the devices and fill shall be removed and the area restored to the original condition and reseeded. The fill shall be disposed of as directed by the Engineer.
- The item "Type B Attenuation Device" will be measured by the number installed. The bid shall include all material, equipment relocation if required, labor and removal and shall be full compensation to complete the work.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-1-86	
REVISIONS	
DATE	CHANGE
09-02-97	Revised type B layout
12-29-97	Revised note 1
07-21-98	Ref. type IIIc
06-19-02	Fill requirements
07-10-02	Module fill
10-16-02	Rev. layout, modular
08-25-03	ht., length, and note
12-01-04	Rev. type B layout PE stamp added

This document was originally issued and sealed by MARK S GAYDOS, Registration Number PE-4518, on 12/01/04 and the original document is stored at the North Dakota Department of Transportation